

6.3 Represent Exponential Expressions

p. 362-367

Manipulating a Base of a Power
p.364

i)

$$4 \Rightarrow 2^x \Rightarrow 2^2$$

$$9 \Rightarrow 3^x \Rightarrow 3^2$$

$$27 \Rightarrow 3^3$$

$$32 \Rightarrow 2^5 \Rightarrow 2^5$$

$$125 \Rightarrow 5^3$$

$$100 \Rightarrow 10^2$$

Mar 24-11:12 AM

Solving an Exponential Equation Involving Powers p. 364

$$5^x = 125$$

set both sides to the same base

$$5^x = 5^3$$

$$\therefore x = 3$$

ii) $3^{x+5} = 27^{x-1}$

$$3^{x+5} = 3^{3(x-1)}$$

$$3^{x+5} = 3^{3x-3}$$

$$x+5 = 3x-3$$

$$5+3 = 3x-x$$

$$8 = 2x$$

$$4 = x$$

iii) $2^{x+2} = 8^{x-6}$

$$2^{x+2} = 2^{3(x-6)}$$

$$x+2 = 3(x-6)$$

$$x+2 = 3x-18$$

$$2+18 = 3x-x$$

$$20 = 2x$$

$$10 = x$$

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Evaluate a problem Involving Expressions with Powers
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Example 3

$$\text{Raj} \Rightarrow S = 2^d$$

$$\text{Helen} \Rightarrow S = 4^{(d-3)}$$

When will they be equal?

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Evaluate a problem Involving Expressions with Powers
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Example 3

$$\text{Raj} \Rightarrow S = 2^d$$

$$\text{Helen} \Rightarrow S = 4^{(d-3)}$$

When will they be equal?

$$2^d = 4^{(d-3)}$$

$$2^d = 2^{2(d-3)}$$

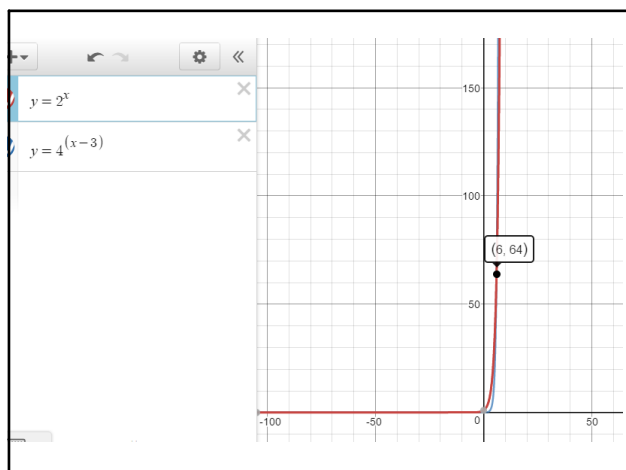
$$d = 2(d-3)$$

$$d = 2d - 6$$

$$d + 6 = 2d$$

On day 6 Raj and Helen have equal scores.

Apr 11-7:22 AM



Nov 9-12:14 PM

Key Concepts

- Powers can be represented in various ways, using different base values.
- If two equal powers have the same base, then their exponents must also be equal.
- It is sometimes useful to change the base of an exponential expression when solving equations.

Discuss the Concepts

D1. There is more than one equivalent way to write a power. Is this statement true or false? Include two examples to support your answer.

D2. Which equation is equivalent to $2^{x+1} = 4^x$? How do you know?

A $2^{x+1} = 4^{2x}$

B $2^{x+1} = 2^{x+2}$

C $2^{x+1} = 2^{2x}$

D $2^{x+1} = (\sqrt{4})^x$

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Hmk. p. 365 -367
q. 1-7, 8, 10 & 11*

$$0.1 = \frac{1}{10} \text{ base } 10$$

Mar 8-7:37 AM

Apr 21-10:00 AM